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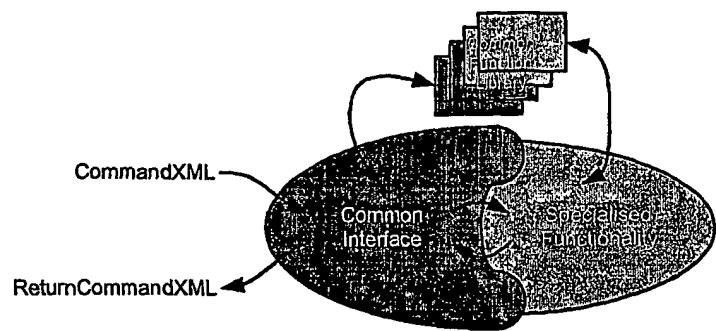


Figure 1 – Data Collector System Object

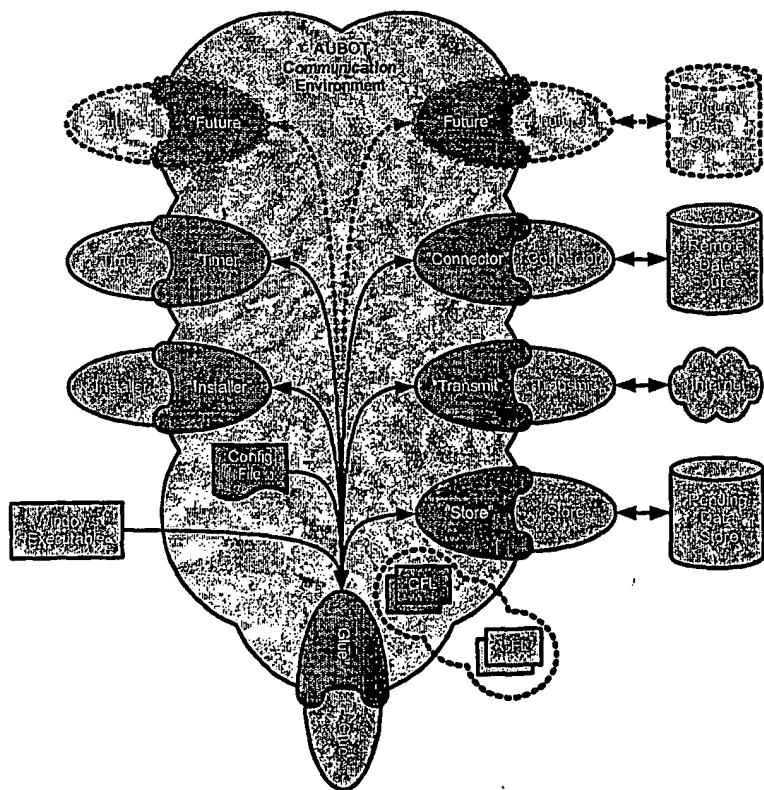


Figure 2– Data Collector System Communication Environment

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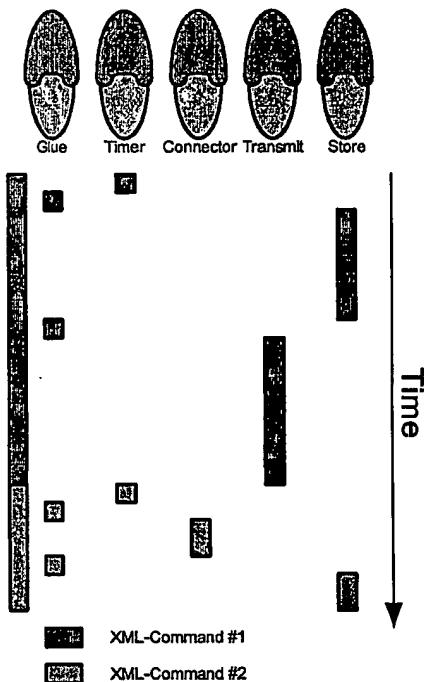


Figure 3 - Synchronous

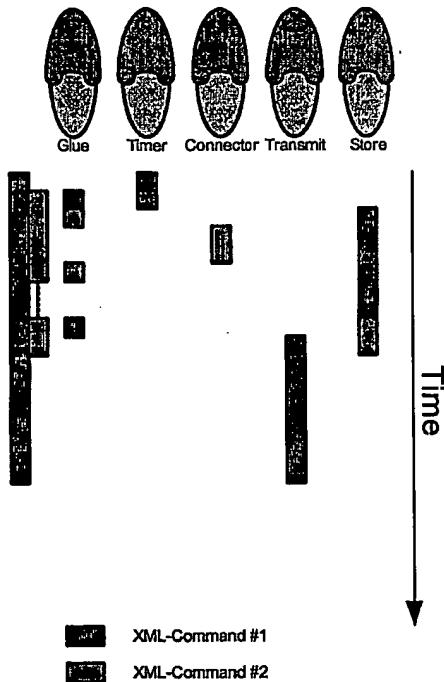


Figure 4 - Asynchronous

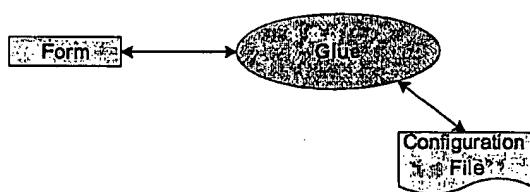


Figure 5 Core system

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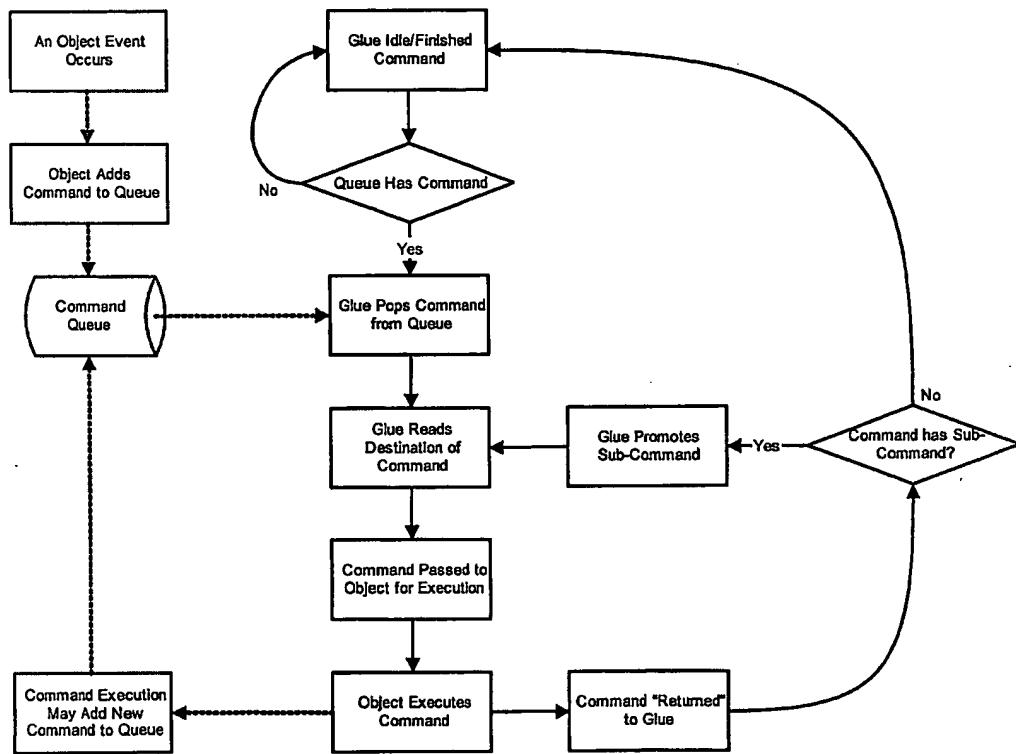
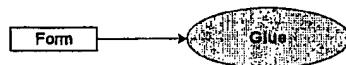
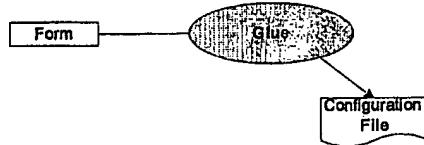


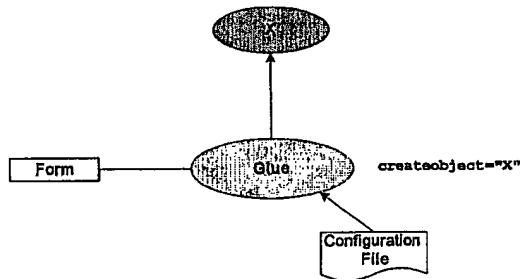
Figure 6 Process of command execution

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1 Form at startup

2 Form creates Glue

3 Glue reads configuration file

4 Glue instructed to create object 'X'

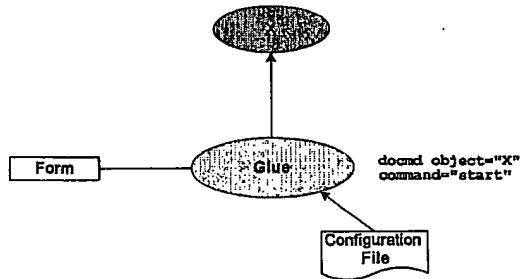
5 Glue passes start command to object 'X' for execution

Figure 7 Example of Glue executing and passing commands at startup

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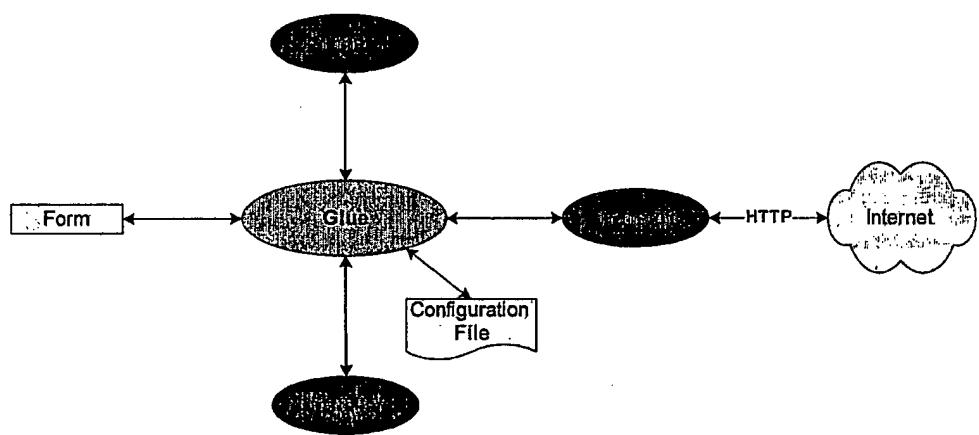


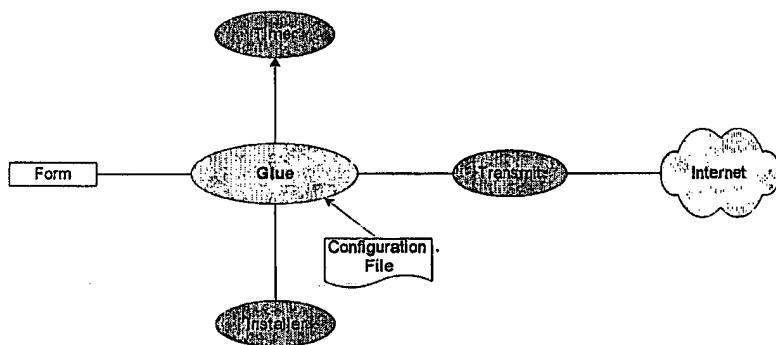
Figure 8 Base system

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Figure 9 establishing a heartbeat

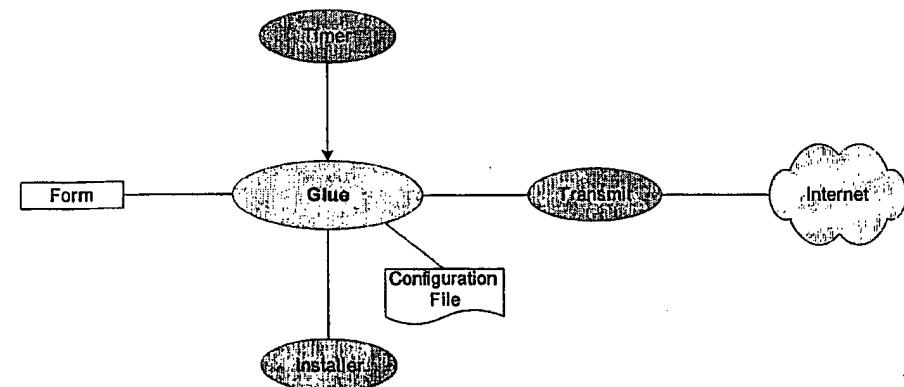
- 1 Timer receives instructions from Glue to send (heartbeat) command every 30 seconds**

```
<docmd object="Timer" command="Register" interval="30"
       units="Seconds">
<data type="Command">
<docmd object="Transmit" command="HeartBeat" />
</data>
</docmd>
```



30 seconds passes

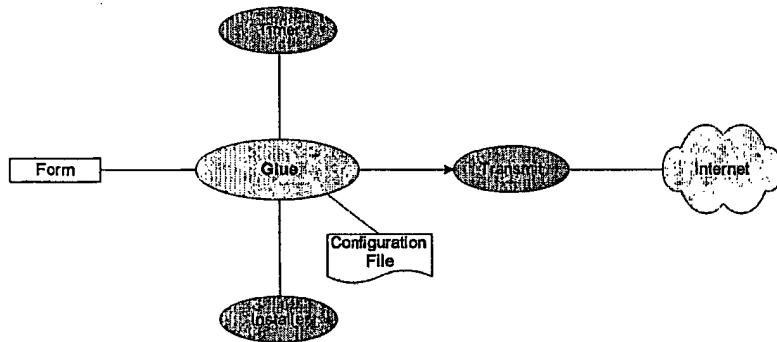
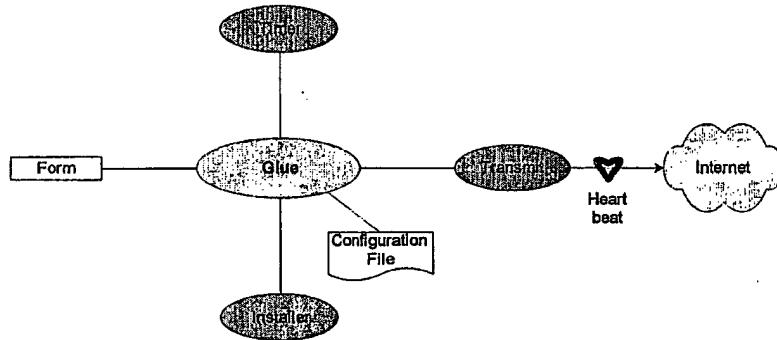
- 2 Timer informs Glue that there is a command to execute. Glue adds command to queue to be eventually popped off as the current command**



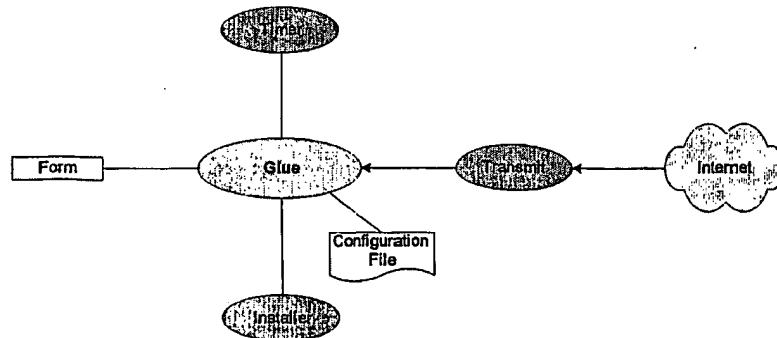
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3 Glue passes command to Transmit

```
<docmd object="Transmit" command="HeartBeat" />
```

**4 Transmit sends heartbeat****5a Heartbeat returns with "Nothing"**

```
<docmd object="Glue" command="Nothing" />
```



5b Heartbeat returns with commands to execute

```
<docmd object="Installer" command="Install" filename="object.dll">
<data type="DLL">'encoded DLL'</data>
<data type="SuccessCommand">
<docmd object="Glue" command="AddSystemData">
<docmd object="Transmit" command="Dock" datatype="Success"/>
<data type="Success">
<message writeout="object.dll installed successfully."/>
</data>
</docmd>
</data>
<data type="FailureCommand">
<docmd object="Glue" command="AddSystemData">
<docmd object="Transmit" command="Dock" datatype="Failure"/>
<data type="Failure">
<message writeout="object.dll install failed."/>
</data>
</docmd>
</data>
</docmd>
```

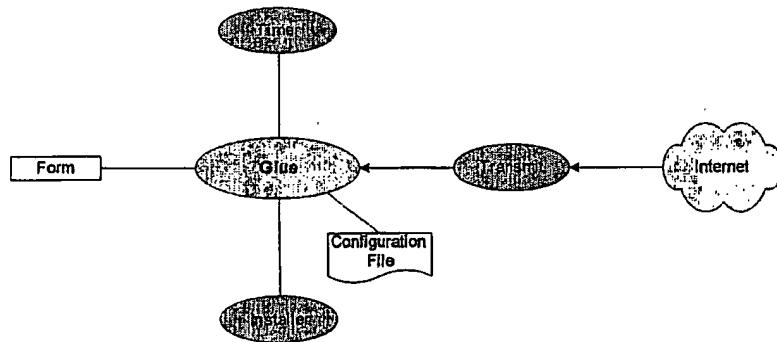
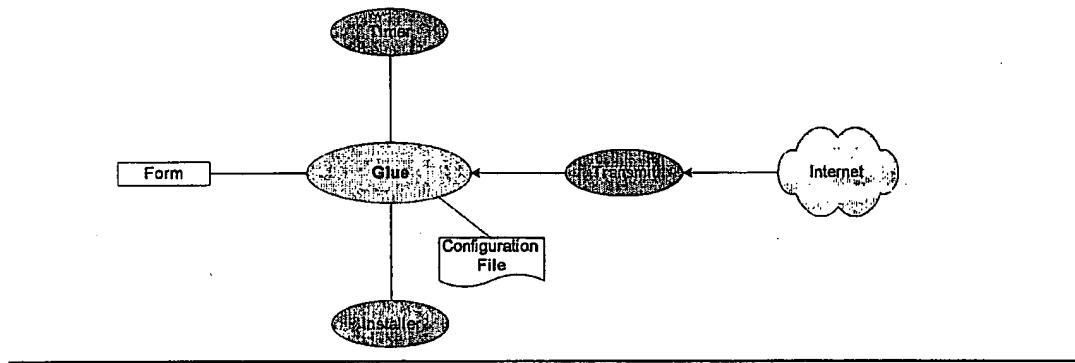


Figure 9 establishing a heartbeat

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Figure 10 Installation of new object

- 1** Transmit receives command and passes to Glue. Glue adds command to queue to be eventually popped off as the current command

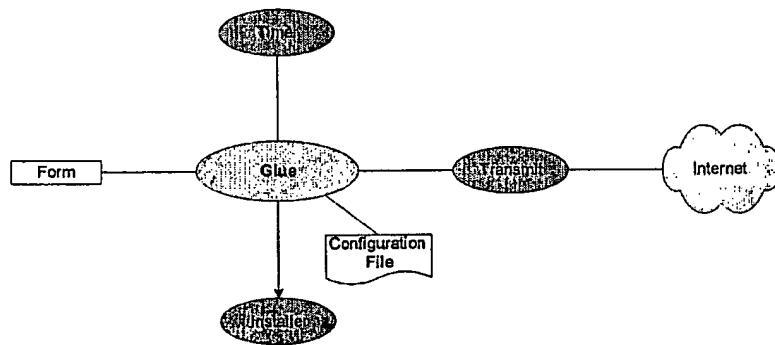
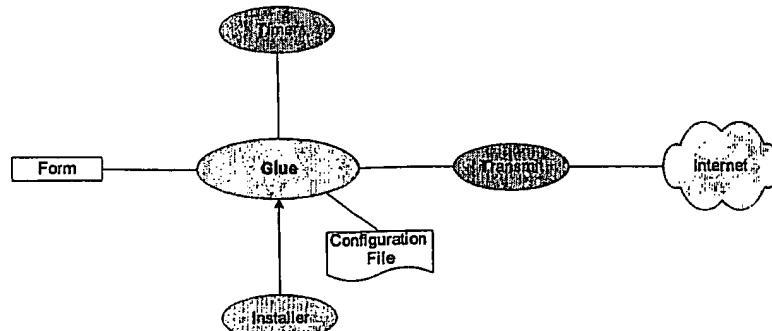


2 Glue passes command to Installer

```

<docmd object="Installer" command="Install" filename="object.dll">
  <data type="DLL">'encoded DLL'</data>
  <data type="SuccessCommand">
    <docmd object="Transmit" command="Dock" datatype="Success"/>
    <data type="Success">
      <message writeout="object.dll installed successfully."/>
    </data>
  </data>
  <data type="FailureCommand">
    <docmd object="Transmit" command="Dock" datatype="Failure"/>
    <data type="Failure">
      <message writeout="object.dll install failed."/>
    </data>
  </data>
</docmd>

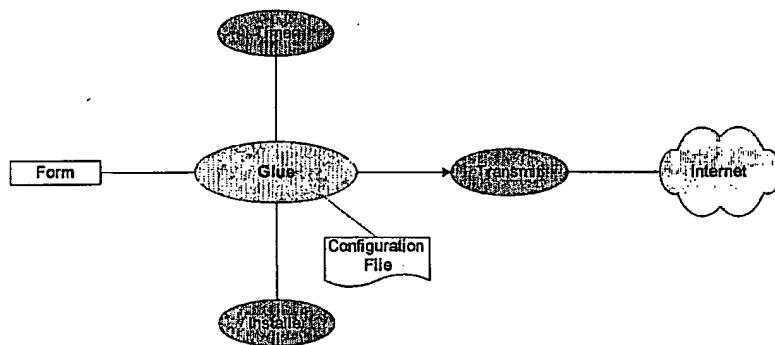
```

**3 Installer attempts to install new object. As install was successful, Installer passes the command contained within the "SuccessCommand" datatype to the queue. The current command is passed back to Glue****Figure 10 Installation of new object**

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-
- 4 Glue completes execution of the current command. Eventually the "success" command is popped off as the current command and passed to Transmit

```
<docind object="Transmit" command="Dock" datatype="Success"/>
<data type="Success">
  <message writeout="object.dll installed successfully."/>
</data>
```



-
- 5 Transmit sends status and then passes the command back to Glue. As there are no more sub-commands, Glue ceases execution and pops the next command off of the queue

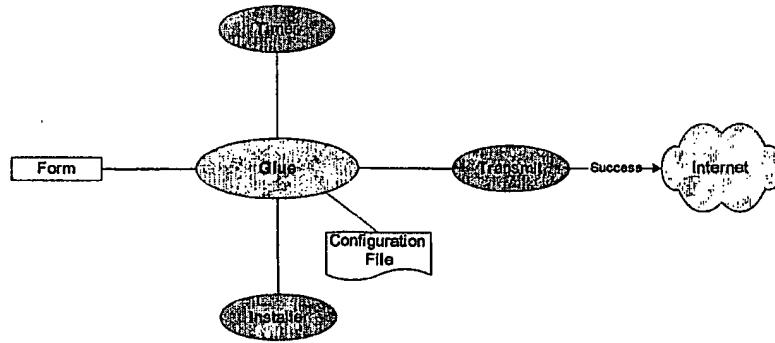


Figure 10 Installation of new object

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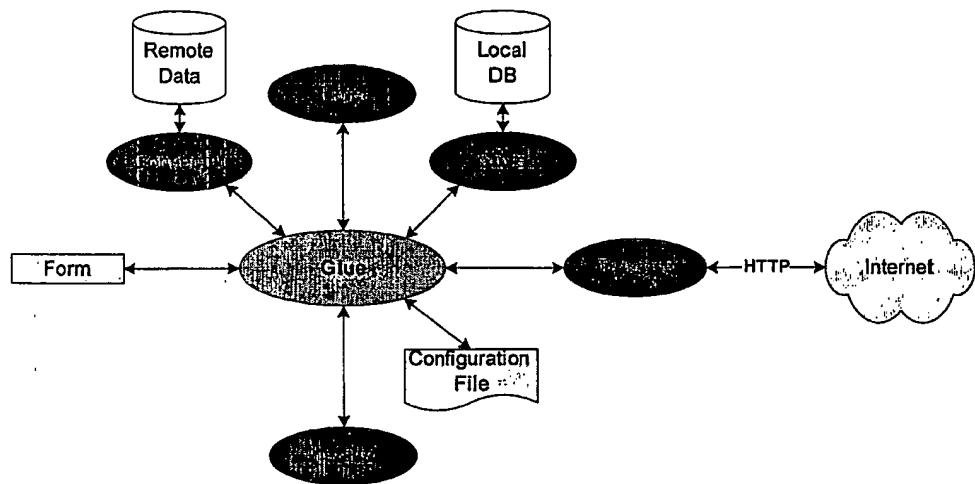


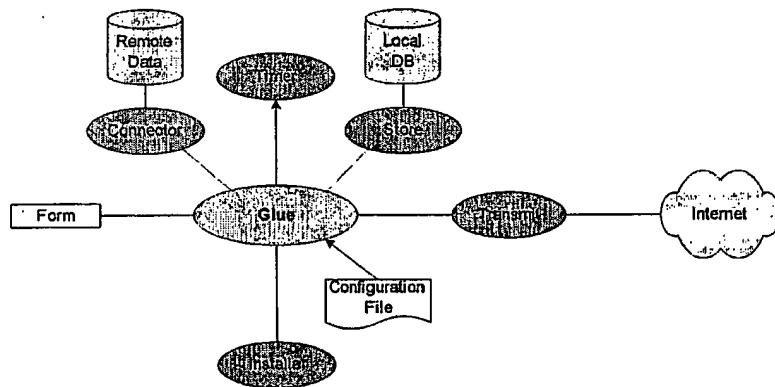
Figure 11 Functional system

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Figure 12 Retrieving data at set time intervals

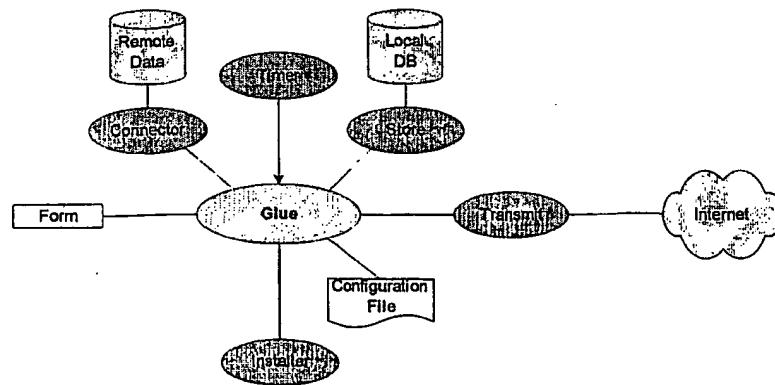
- 1 Timer receives instructions from Glue to send (Get-Add) command every minute**

```
<docmd object="Timer" command="Register" interval="1" units="Minutes"
synctime="00:00">
<data type="Command">
<docmd object="Connector" command="GetInfo">
<docmd object="Store" command="AddItem" datatype="Info" />
</docmd>
</data>
</docmd>
```



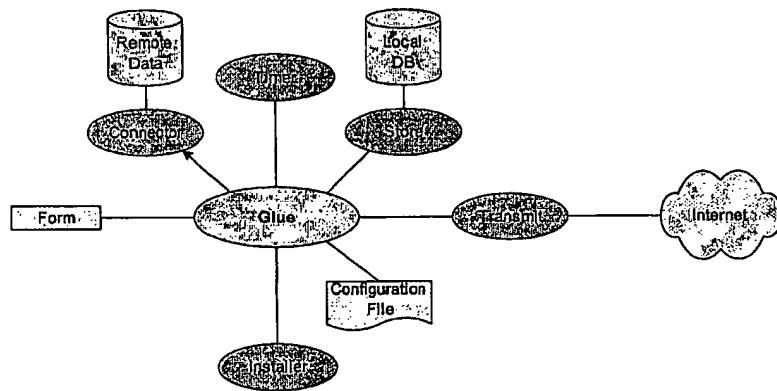
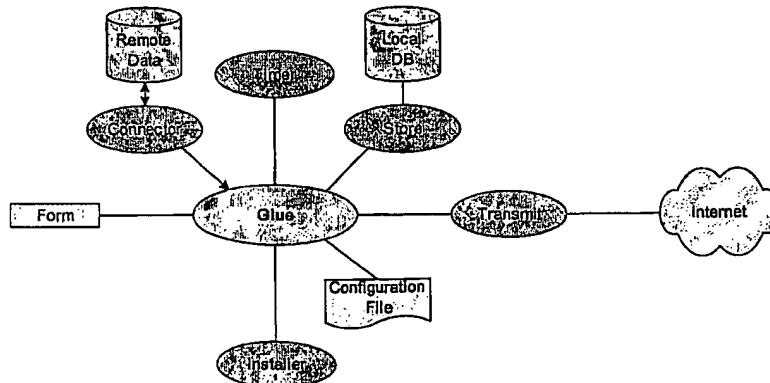
1 minute passes

- 2 Timer informs Glue that there is a command to execute. Glue adds command to queue to be eventually popped off as the current command**



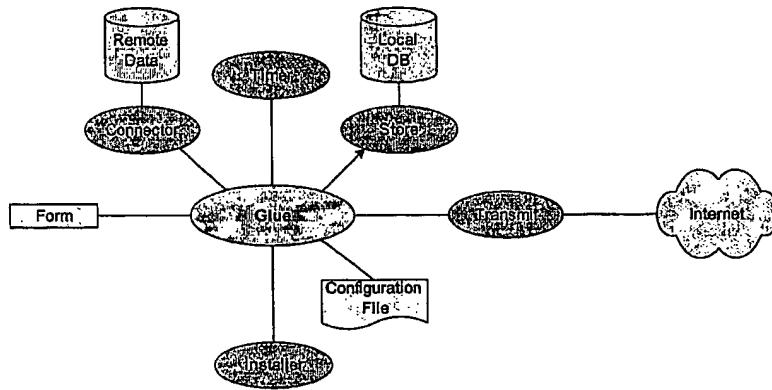
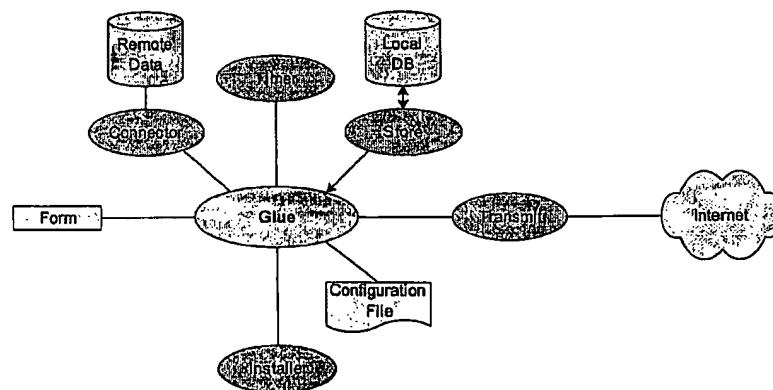
3 Glue passes "GetInfo" command to Connector

```
<docmd object="Connector" command="GetInfo">
  <docmd object="Store" command="AddItem" datatype="Info" />
</docmd>
```

**4 Connector retrieves data from remote data source and passes to Glue with current command. Glue checks if command contains sub-commands, and then promotes the first sub-command as the current command****Figure 12 Retrieving data at set time intervals**

5 Glue passes "AddItem" command to Store

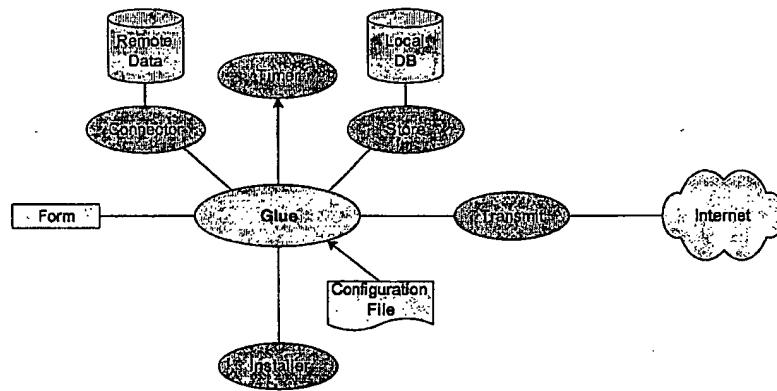
```
<docmd object="Store" command="AddItem" datatype="Info" />
```

**6 Store adds data to local database and passes message back to Glue. As there are no more sub-commands, Glue ceases execution and pops the next command off of the queue****Figure 12 Retrieving data at set time intervals**

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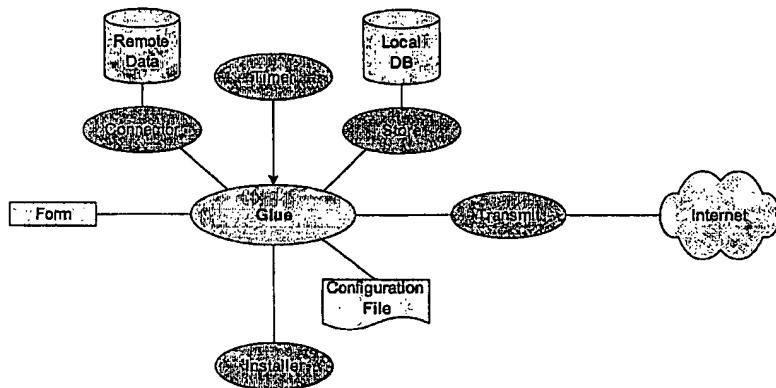
Figure 13 Sending data at set time intervals**1 Timer receives instructions from Glue to send a (Bundle-Dock) command every four hours**

```
<docmd object="Timer" command="Register" interval="4" units="Hours"
synctime="00:00">
<data type="Command">
<docmd object="Store" command="BundleCurrentItems">
<docmd object="Transmit" command="Dock" datatype="Bundle"/>
</docmd>
</data>
</docmd>
```



4 hours pass

- 2 Timer informs Glue that there is a command to execute. Glue adds command to queue to be eventually popped off as the current command**



- 3 Glue passes "BundleCurrentItems" command to Store**

```
<docmd object="Store" command="BundleCurrentItems">
  <docmd object="Transmit" command="Dock" datatype="Bundle" />
</docmd>
```

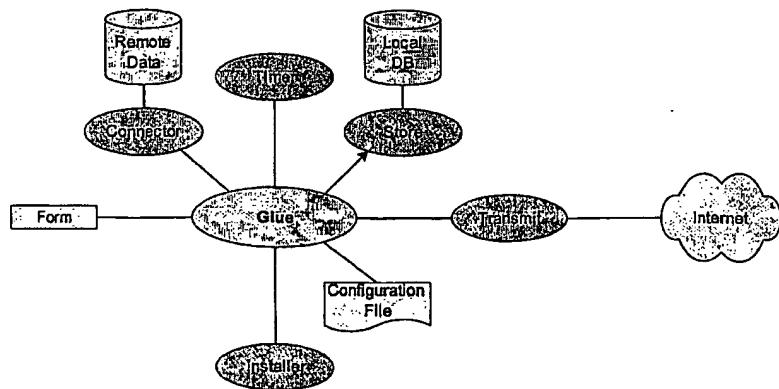
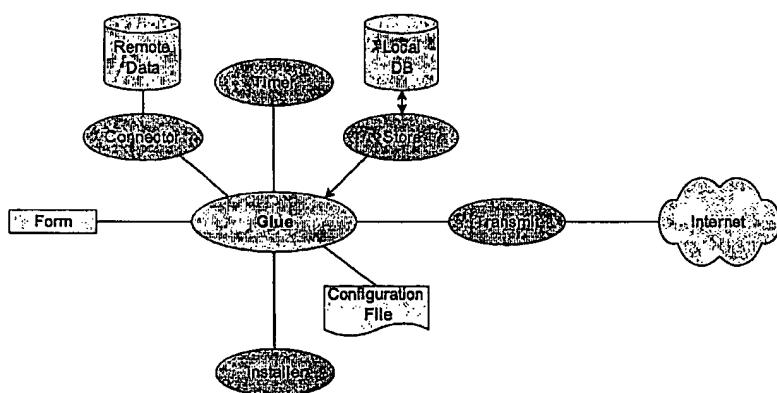


Figure 13 Sending data at set time intervals

- 4 Store bundles current items in the local database and passes bundle and current command back to Glue. Glue checks if command contains sub-commands, and then promotes the first sub-command as the current command



- 5 Glue passes "Dock" command to Transmit

```
<docmd object="Transmit" command="Dock" datatype="Bundle" />
```

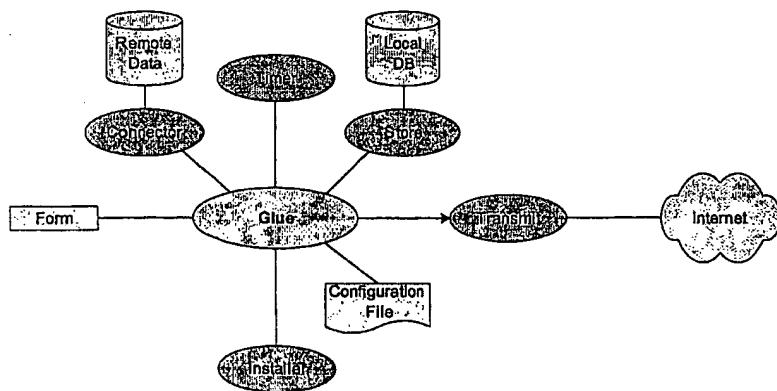
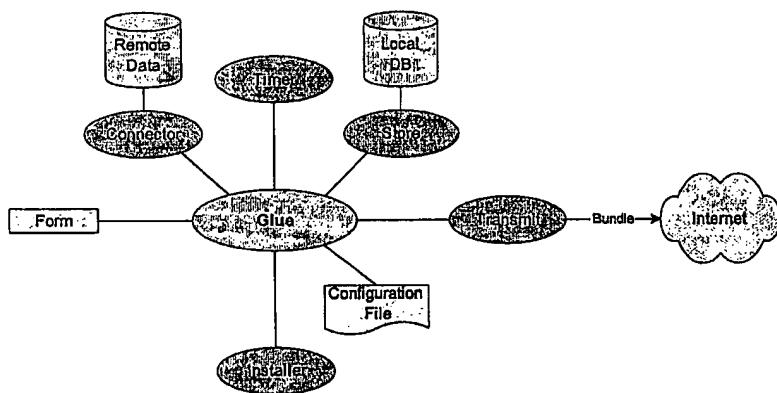


Figure 13 Sending data at set time intervals

6 Transmit sends bundle

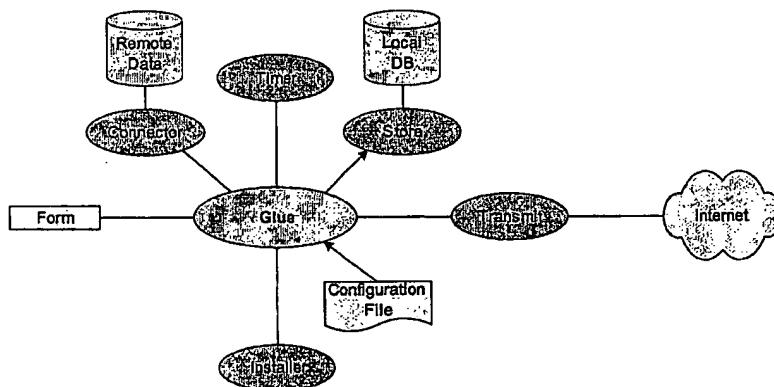
7 Transmit returns bundle and commands to Glue. As there are no more sub-commands, Glue ceases execution and pops the next command off of the queue

Figure 13 Sending data at set time intervals

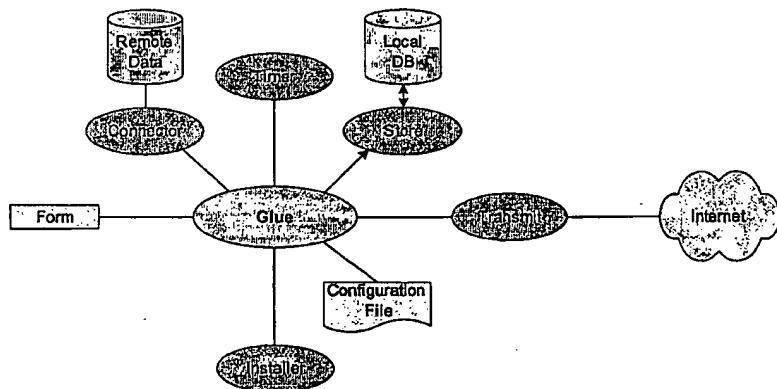
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Figure 14 the sending of data bundles at set capacity levels.**1 Store receives instructions from Glue to send a (Bundle-Dock) command when local data****base contains 200 data items**

```
<docmd object="Store" command="SetTriggers" itemscount="200" itemsizekbs="800">
<data type="Command">
    <docmd object="Store" command="BundleCurrentItems">
        <docmd object="Transmit" command="Dock" datatype="Bundle">
        </docmd>
    </data>
</docmd>>
```



2 200th data item is added to the local database



3 Store processes own commands first (ie. bundles) then informs Glue that there is a command to execute. Glue adds command to queue to be eventually popped off as the current command

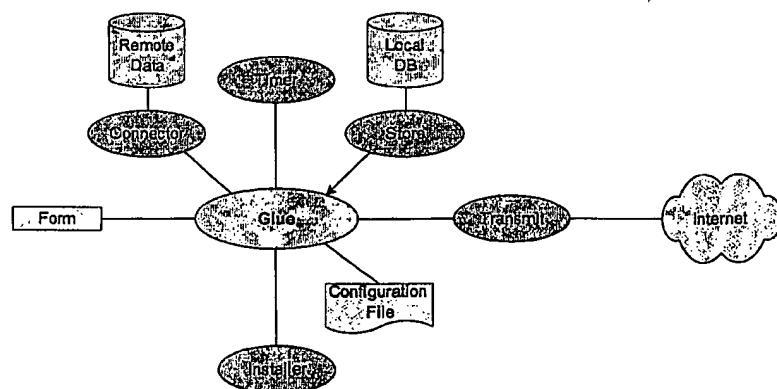
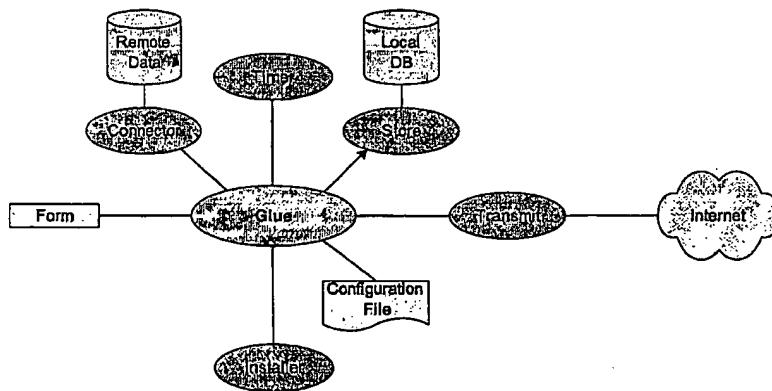


Figure 14 the sending of data bundles at set capacity levels.

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4 Glue passes "BundleCurrentItems" command to Store

```
<docmd object="Store" command="BundleCurrentItems">
  <docmd object="Transmit" command="Dock" datatype="Bundle">
  </docmd>
```



5 Store bundles items in local database and passes back to Glue with command. Glue checks if command contains sub-commands, and then promotes the first sub-command as the current command

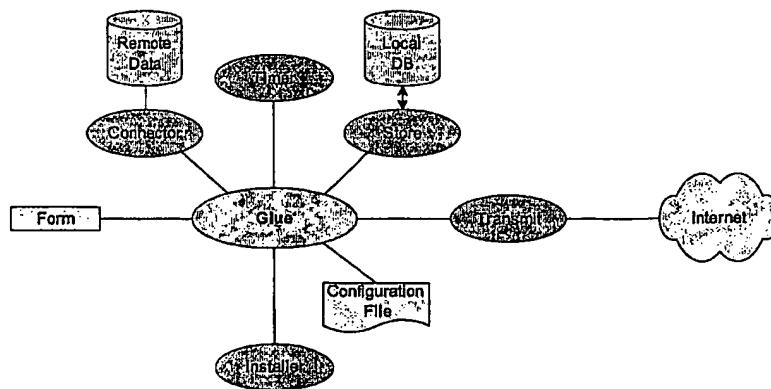
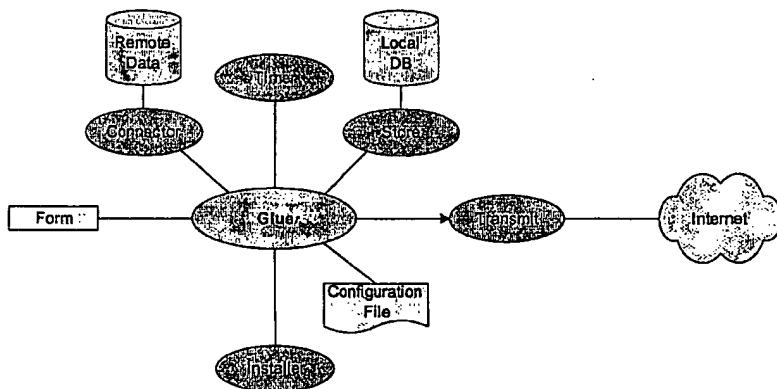
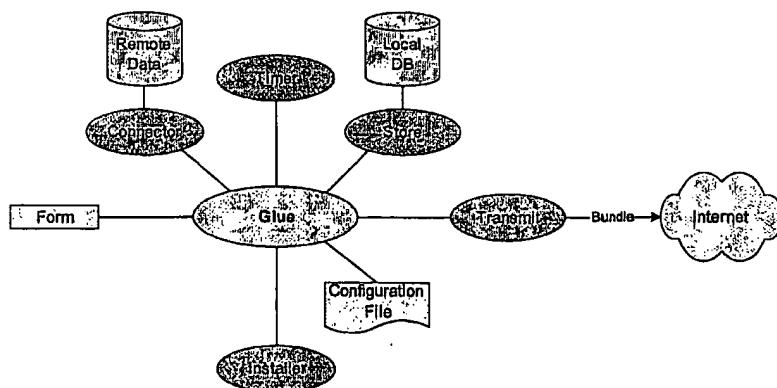


Figure 14 the sending of data bundles at set capacity levels.

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6 Glue passes "Dock" command to Transmit

<docmd object="Transmit" command="Dock" datatype="Bundle">

**7 Transmit sends bundle and passes command back to Glue. As there are no more sub-commands, Glue ceases execution and pops the next command off of the queue****Figure 14 the sending of data bundles at set capacity levels.**

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